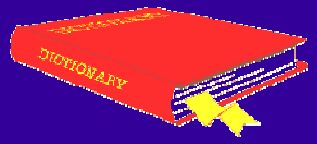
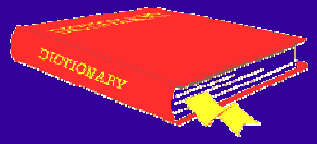
Basic Concepts for Assessing Environmental Impacts



Definitions:

- **Environmental impact assessment**
  - a formal process for identifying the likely effects of particular activities or projects on the environment and on human health and welfare
  - includes the development of mitigation and monitoring measures



Definitions:

- The **environment,** which has many components:
  - physical: geology, topography, soils, water resources, air quality, etc
  - biological: fauna, flora, biodiversity, and ecosystems
  - social: including culture, religion, and local values
- **Impacts:**
  - deviations from a baseline situation
- **Assessment:**
  - the exercise of identifying impacts likely to arise from an activity or project, quantifying them, and assessing their significance

Why assess environmental impacts?

- Practical motivation: Often a requirement
- Conceptual motivation:
  - Development cannot be sustainable unless it considers environmental impacts
- Other tangible benefits:
  - Avoid problems before they occur--lower project costs in the long-term
  - Provides decision-makers with alternatives
  - Provides benefits to public such as opportunity to learn, express concerns, and influence decision-making process

Guiding goals and principles

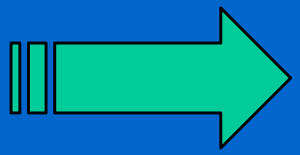
- Goal: keep undesirable environmental effects to a practicable minimum
- Principles:
  - consider real alternatives
  - identify and concentrate on the key issues
  - predict key impacts and judge their significance
  - identify ways to reduce these impacts
  - communicate with clarity
  - systematic, reproducible, and public

The EIA process

Phase 1

Initial Inquiries

- Understanding the project
- Screening
- Preliminary assessment (if needed)
- Scoping (if needed)

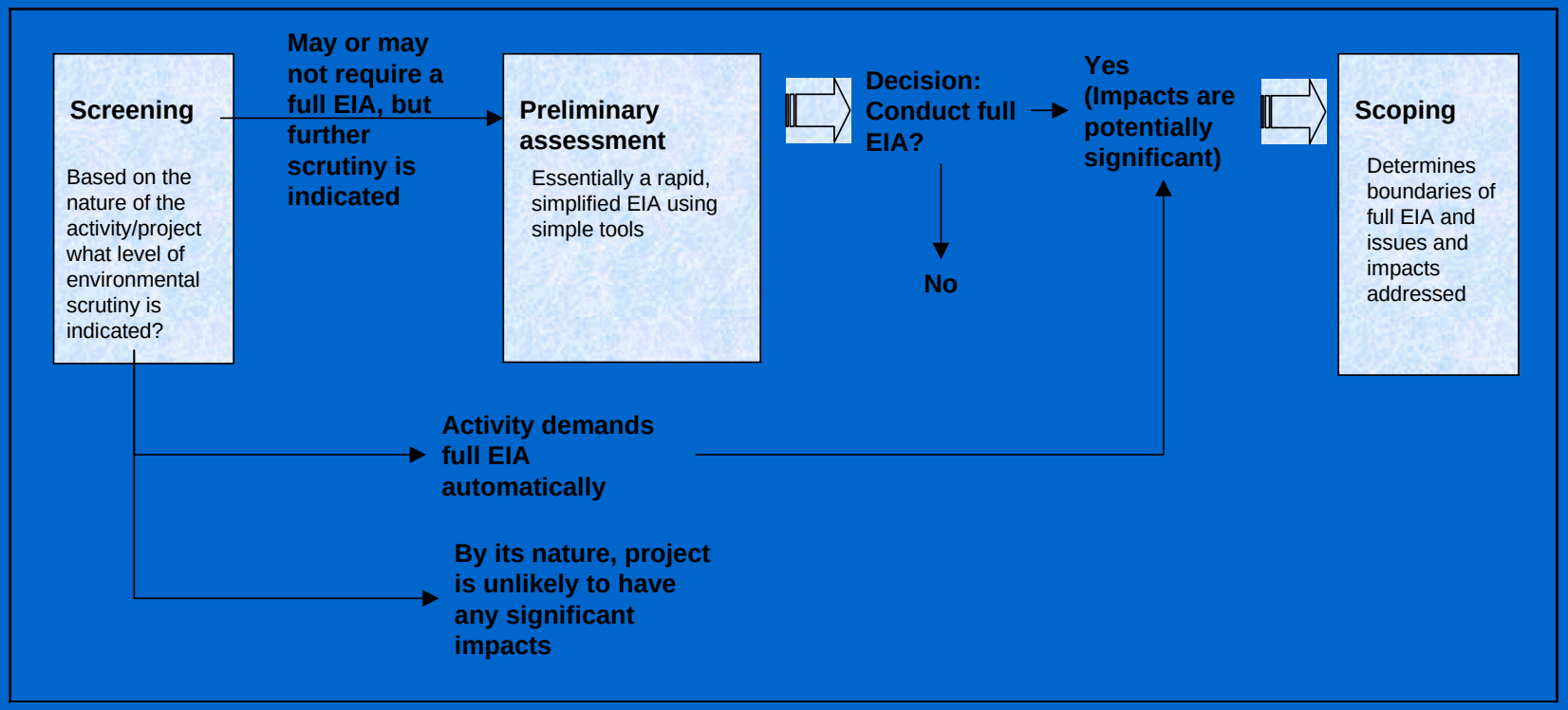


Phase 2

Full EIA (if needed)

- Baseline study
- Selecting alternatives
- Identifying potential impacts
- Quantifying/predicting impacts
- Selecting mitigation options
- Implementing mitigation and monitoring plans

Phase 1: Initial inquiries



Phase 1: Initial inquiries

- Understanding the project:
  - part 1. Understand *why* the project is being undertaken

why a road? 

why a dam? 

➔ Answering 'why?' helps frame alternatives

Phase 1: Initial inquiries

- Understanding the project::
  - part 2: Understand *what* is being proposed
    - ➔ communicate with engineers, developers, affected community
    - ➔ visit similar projects elsewhere
    - ➔ Identify and consider associated activities:
      - ♣ upstream activities (e.g., obtaining construction materials from sources)
      - ♣ downstream activities (e.g., waste disposal, water contamination)
      - ♣ temporary structures (e.g., retaining walls, construction roads)

Phase 1: Initial inquiries

- Understanding the project
  - List out:
    - ➔ Goal/Purpose of Project (Consider Alternatives)
    - ➔ Ancillary Activities (Quarries, Haul Roads, Transmission Lines)
    - ➔ Inputs Needed (Raw Materials, Energy, Equipment)
    - ➔ Operational Characteristics
    - ➔ By-products and Waste Produced
    - ➔ Financing Plan and Sequencing/Phasing of Activities

Phase 1: Initial inquiries

- Screening
  - Based on the projects' *general characteristics*, what type of environmental review is required?
- Preliminary assessment:
  - a rapid, streamlined EIA with simplified or more generic tools. (for example, the USAID IEE).
- Scoping
  - establish the boundaries of a full EIA study

Phase 2: the full EIA

- Steps in a full EIA:
  - Conduct a baseline study
  - Consider a range of alternatives
  - Identify and predict impacts
  - Determine impact significance
  - Compare and evaluate alternatives
  - Consider options to mitigate or compensate for impacts
  - Prepare mitigation and monitoring plans

Phase 2: the full EIA

- Evaluate Baseline Situation
  - Basic question: what would happen in the absence of the project?
  - Useful as a basis for comparison:

♍ geology ♍ topography ♍ soils ♍ climate ♍ groundwater ♍ surface water ♍ ecosystems - aquatic, terrestrial ♍ sensitive areas ♍ endangered species ♍ noise ♍ air ♍ transport ♍ land use ♍ historic & archeological ♍ social & economic ♍

Phase 2: the full EIA

- Consider a Range of Alternatives
  - Three types of options:
    - ➔ the proposed project
    - ➔ the "no-project" alternative
    - ➔ other alternatives
  - Important to:
    - ➔ identify and describe alternatives as soon as possible
    - ➔ focus on credible alternatives

Phase 2: the full EIA

- Identify Potential Impacts
  - Many tools and methods available
  - Types of Impacts
    - ➔ Direct vs. indirect impacts
    - ➔ Short-term vs. long-term impacts
    - ➔ Adverse vs. beneficial impacts
    - ➔ Cumulative impacts
  - Important to concentrate on “big-ticket” factors

Phase 2: the full EIA

- Predict Potential Impacts
  - Quantitative analysis (simulation models, statistical analysis, etc)
  - Qualitative analysis (professional judgment, intuitive reasoning, etc)

♍ Magnitude
♍ Extent
♍ Frequency
♍ Risk - Probability & degree of risk
♍ Direction
♍ Duration
♍ Reversibility

Phase 2: the full EIA

- Determine Significance of Potential Impacts
  - Some key factors:
    - ➔ public health and safety, risk (high or unknown)
    - ➔ aesthetics and recreation, other unique characteristics
    - ➔ resource availability, farmland, forests, wildlife
    - ➔ public concern / controversy / precedent-setting
    - ➔ disturbance of protected/valued habitats
    - ➔ disruption of local customs
  - Inherently a value judgement
    - ➔ needs, sustainability
    - ➔ law, policy, regulation

Phase 2: the full EIA

- Compare and Evaluate Alternatives
  - Systematic approaches can help in evaluation process
  - Choosing the preferred alternative involves a value judgment
    - ➔ what matters, and to whom?
    - ➔ what governs, controls, or regulates?

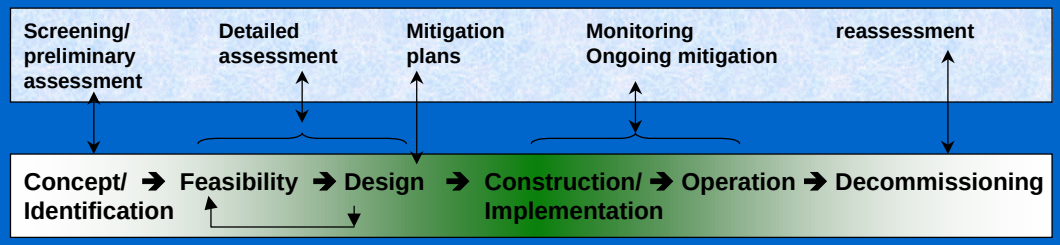
Phase 2: the full EIA

- Mitigation and monitoring plans
  - prevention
  - remediation
  - operating activities and maintenance
  - offsetting actions
- Communication and documentation--throughout the EIA process

When Should Environmental Impacts be Assessed?

- As early as possible, AND
- As a continuing process, linked to the project cycle

The EIA process



The project lifecycle

- *Note: It's rarely too late to consider environmental issues*

Stakeholders involved

- The sponsor of the activity
  - can lead to conflict of interest in some cases
- Regulatory agencies
- The public
  - broad-based public participation is the best way to assure that impacts on different segments of the population are recognized

Who is Affected?
Equity and Environmental Justice

-  old-young
-  male-female
-  pastoralist
-  urbanite
-  sick-well
-  rich-poor
-  farmer
-  people in the country